



Urban heat island effects on estimates of observed climate change

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Abstract:

Urban heat islands are a result of the physical properties of buildings and other structures, and the emission of heat by human activities. They are most pronounced on clear, calm nights; their strength depends also on the background geography and climate, and there are often cool islands in parks and less-developed areas. Some old city centers no longer show warming trends relative to rural neighbourhoods, because urban development has stabilised. This article reviews the effects that urban heat islands may have on estimates of global near-surface temperature trends. These effects have been reduced by avoiding or adjusting urban temperature measurements. Comparisons of windy weather with calm-weather air temperature trends for a worldwide set of observing sites suggest that global near-surface temperature trends have not been greatly affected by urban warming trends; this is supported by comparisons with marine surface temperatures. The use of dynamical-model-based reanalyses to estimate urban influences has been hindered by the heterogeneity of the data input to the reanalyses and by biases in the models. However, improvements in reanalyses are increasing their utility for assessing the surface air temperature record. High-resolution climate models and data on changing land use offer potential for future assessment of worldwide urban warming influences. The latest assessments of the likely magnitude of the residual urban trend in available global near-surface temperature records are summarized, along with the uncertainties of these residual trends.

Source: <http://wires.wiley.com/WileyCDA/WiresArticle/wisId-WCC21.html>

Resource Description

Exposure :

weather or climate related pathway by which climate change affects health

Temperature

Temperature: Extreme Heat

Geographic Feature:

resource focuses on specific type of geography

Urban

Geographic Location:

resource focuses on specific location

Climate Change and Human Health Literature Portal

Global or Unspecified

Health Impact:

specification of health effect or disease related to climate change exposure

General Health Impact

Mitigation/Adaptation:

mitigation or adaptation strategy is a focus of resource

Adaptation

Model/Methodology:

type of model used or methodology development is a focus of resource

Methodology

Resource Type:

format or standard characteristic of resource

Review

Timescale:

time period studied

Time Scale Unspecified

Vulnerability/Impact Assessment:

resource focus on process of identifying, quantifying, and prioritizing vulnerabilities in a system

A focus of content